LISTING OF CLAIMS

Claims 3-9, 12-17, and 20-28 are pending.

1-2. (canceled)

3. (previously presented) A method for measuring an indication of attributes of materials containing a fluid state, the method comprising the steps of:

a. providing a single time-domain signal indicative of attributes of said materials;

b. constructing a time-domain averaged data train from said signal, the averaging being performed over two or more time intervals Δ_i, wherein at least two of said two or more time intervals Δ_i are different; and

c. computing an indication of attributes of said materials from the time-domain averaged data train.

4. (previously presented) The method of claim 3 wherein the following expression is used to construct the time-domain averaged data train within a Δ_i time interval:

$S_{\Delta_i} = \int_{t}^{t+\Delta_i} dt' S(t')/\Delta_i$, where $S(t)$ is the provided time-domain signal.

5. (previously presented) The method of claim 3, wherein a portion of the time-domain averaged data train is constructed at times $t = t_0, t_0 + \Delta_i, t_0 + 2\Delta_i, \ldots, t_0 + N\Delta_i$.

6. (previously presented) The method of claim 3, wherein the time-domain signal is an NMR echo train.

7. (original) The method of claim 6, wherein the step of computing an indication of attributes is performed using inversion of the constructed time-domain averaged data train into T_2 domain.

8. (previously presented) The method of claim 7, wherein the T_2 distribution is estimated using the following expression $S_{\Delta_i}(t) = \sum_{T_2} \phi(T_2) \exp(-t/T_2)(1 - \exp(-\Delta_i/T_2)) + Noise$,

where $\phi(T_2)$ is the porosity corresponding to the exponential decay time T_2.

9. **(previously presented)** The method of claim 3 further comprising the step of averaging two or more constructed time-domain averaged data trains to increase the signal-to-noise ratio (SNR) of the measurement.

10-11. (canceled)

12. **(previously presented)** A method for measuring an indication of attributes of materials containing a fluid state in a formation surrounding a borehole, comprising the steps of:
    a. providing a single NMR echo-train indicative of attributes of materials in the formation surrounding the borehole;
    b. constructing a single time-domain averaged data train from said NMR echo train, the averaging being performed over two or more time intervals Δ_i, wherein at least two of said two or more time intervals Δ_i are different; and
    c. computing an indication of attributes of said materials from the time-domain averaged data train.

13. **(previously presented)** The method of claim 12 further comprising the step of averaging two or more constructed time-domain averaged data trains to increase the signal-to-noise ratio (SNR) of the measurement.

14. **(previously presented)** The method of claim 12 wherein the following expression is used to construct the time-domain averaged data train: $Echo_{\Delta_i}(t) = \int_t^{t+\Delta_i} dt' Echo(t')/\Delta_i$, where $Echo(t)$ is the provided time-domain signal over a time interval Δ_i.

15. **(previously presented)** The method of claim 12, wherein a portion of the time-domain averaged data train is constructed at times $t = t_0, t_0 + \Delta_i, t_0 + 2\Delta_i, \ldots, t_0 + N\Delta_i$.

16. **(previously presented)** The method of claim 15, wherein the step of computing an indication of attributes is performed using inversion of the constructed time-domain averaged data train into T_2 domain.

17. **(previously presented)** The method of claim 16, wherein the T_2 distribution is estimated using the following expression
    $Echo_{\Delta_i}(t) = \sum_{T_2} \phi(T_2)\exp(-t/T_2)(1-\exp(-\Delta_i/T_2)) + Noise$, where $\phi(T_2)$ is the porosity corresponding to the exponential decay time T_2.

18-19. (canceled)

20. (previously presented) A method for increasing the spatial resolution of NMR logging measurements, comprising the steps of:

a. providing a single NMR echo-train indicative of attributes of materials of interest; and

b. constructing a single time-domain averaged data train from said single NMR echo train, the averaging being performed over two or more time intervals Δ_i, wherein at least two of said two or more time intervals Δ_i are different.

21. (previously presented) The method of claim 20 further comprising the step of averaging two or more constructed time-domain averaged data trains to increase the signal-to-noise ratio (SNR) of the measurement.

22. (previously presented) The method of claim 20 wherein the following expression is used to construct the time-domain averaged data train: $Echo_{\Delta_i}(t) = \int_t^{t+\Delta_i} dt' Echo(t')/\Delta_i$, where $Echo(t)$ is the provided time-domain signal.

23. (previously presented) The method of claim 20, wherein the time-domain averaged data train is constructed at times $t = t_0, t_0 + \Delta_i, t_0 + 2\Delta_i, \ldots, t_0 + N\Delta_i$.

24. (original) The method of claim 23, wherein the step of computing an indication of attributes is performed using inversion of the constructed time-domain averaged data train into T_2 domain.

25. (previously presented) The method of claim 24 wherein the T_2 distribution is estimated using the following expression

$Echo_{\Delta_i}(t) = \sum_{T_2} \phi(T_2)\exp(-t/T_2)(1-\exp(-\Delta_i/T_2)) + Noise$, where $\phi(T_2)$ is the porosity corresponding to the exponential decay time T_2.

26. (previously presented) A method for real-time processing of NMR logging signals, comprising the steps of:

a. providing real-time data corresponding to a single NMR echo-train indicative of physical properties of materials of interest;

b. constructing a time-domain averaged data train from said NMR echo train, the averaging being performed over variable time interval Δ using the expression

$S_\Delta(t) = \int_t^{t+\Delta} dt' S(t')/\Delta$, where $S(t)$ is the provided measurement signal, and the time-

domain averaged data train is constructed at times $t = t_0, t_0 + \Delta, t_0 + 2\Delta, \ldots, t_0 + N\Delta$; and

c. computing in real time an indication of the physical properties of said materials based on the constructed time-domain averaged data train.

27. (original) The method of claim 26, further comprising the step of: inverting of the constructed time-domain averaged data train into the T_2 domain, wherein the T_2 distribution is modeled using the expression $Echo_{\Delta}(t) = \sum_{T_2} \phi(T_2)\exp(-t/T_2)(1-\exp(-\Delta/T_2)) + Noise$, where $\phi(T_2)$ is the porosity corresponding to the exponential decay time T_2.

28. (original) The method of claim 26, further comprising the step of averaging two or more constructed time-domain averaged data trains to increase the signal-to-noise ratio (SNR) of the measurement.